We claim:

1. A method of optimizing delivery of an extra-systolic stimulation (ESS) therapy for a plurality of extra-systolic intervals (ESIs), comprising:

setting a test ESI for delivery of an ESS therapy;
applying the ESS therapy at the test ESI;
determining a potentiation ratio (PR) and a recirculation fraction (RF);
storing the previously determined PR and RF with the test ESI;
incrementing or decrementing the test ESI to a new value test ESI within a predetermined range of values and repeating the first four steps, wherein the new value test ESI is substituted for the test ESI;
calculating a product of RF and PR for each test ESI;
determining an optimal ESI that corresponds to a maximal product of RF and PR; and
setting an operating ESI to the optimal ESI.

2. A method according to claim 1, wherein the ESS therapy delivery is performed in an implantable pulse generator.

3. A method according to claim 1, wherein the PR and RF is determined upon a contractile function derived from an output signal from a mechanical sensor.

4. A method according to claim 3, wherein the mechanical sensor comprises an accelerometer.

5. A method according to claim 4, wherein the accelerometer is disposed in mechanical communication with a ventricle.

6. A method according to claim 1, wherein the PR and RF is determined upon a contractile function derived from an output signal from a mechanical sensor disposed in fluid communication with a ventricle.

7. A method according to claim 6, wherein the mechanical sensor comprises a fluidic pressure sensor.

8. A method according to claim 4, wherein the fluidic pressure sensor is disposed in fluid communication with a right ventricle.

9. A method according to claim 2, further comprising
periodically performing the method claimed in claim 1.

10. A method of optimizing delivery of an extra-systolic stimulation (ESS) therapy for a given extra-systolic interval (ESI), comprising:
determining a baseline contractile function parameter when an ESS therapy is withheld or not delivered for a sufficient time or number of cardiac cycles for any related hemodynamic enhancement to substantially cease;
delivering the ESS therapy for an interval of time or for a number of cardiac cycles;
calculating an ESS therapy contractile function parameter during the delivery of the ESS therapy;
calculating a potentiation ratio based on the baseline contractile function parameter and the ESS therapy contractile function parameter;
ceasing delivery of the ESS therapy; and
determining a recirculation fraction for several cardiac cycles following the ceasing delivery of the ESS therapy.

11. A method according to claim 10, wherein the ESS therapy delivery is performed in an implantable pulse generator.

12. A method according to claim 10, wherein the PR and RF is determined upon a contractile function derived from an output signal from a mechanical sensor.

13. A method according to claim 12, wherein the mechanical sensor comprises an accelerometer.

14. A method according to claim 13, wherein the accelerometer is disposed in mechanical communication with a ventricle.

15. A method according to claim 10, wherein the PR and RF is determined upon a contractile function derived from an output signal from a mechanical sensor disposed in fluid communication with a ventricle.

16. A method according to claim 15, wherein the mechanical sensor comprises a fluidic pressure sensor.

17. A method according to claim 13, wherein the fluidic pressure sensor is disposed in fluid communication with a right ventricle.

18. A method according to claim 11, further comprising periodically performing the method claimed in claim 1.

19. A method according to claim 10, wherein the PR and RF is determined upon a contractile function derived from an output signal from a physiologic sensor, said physiologic sensor comprising a one of: a saturated oxygen sensor, a lactate sensor, a glucose sensor.

20. A computer readable medium for storing instructions for optimizing delivery of an extra-systolic stimulation (ESS) therapy for a plurality of extra-systolic intervals (ESIs), comprising:

instructions for setting a test ESI;

instructions for determining a potentiation ratio (PR) and a recirculation fraction (RF);

instructions for storing the previously determined PR and RF with the test ESI;

instructions for incrementing or decrementing the test ESI to a new value within a predetermined range of values and repeating the first three steps;

instructions for calculating a product of RF and PR for each test ESI;

instructions for determining an optimal ESI that corresponds to a maximal product of RF and PR; and

instructions for setting an operating ESI to the optimal ESI.

21. An apparatus for optimizing delivery of an extra-systolic stimulation (ESS) therapy for a plurality of extra-systolic intervals (ESIs), comprising:

means for setting a test ESI;

means for determining a potentiation ratio (PR) and a recirculation fraction (RF);

means for storing the previously determined PR and RF with the test ESI;

means for incrementing or decrementing the test ESI to a new value within a predetermined range of values and repeating the first three steps;

means for calculating a dot product of RF and PR for each test ESI;

means for determining an optimal ESI that corresponds to a maximal product of RF and PR; and

means for setting an operating ESI to the optimal ESI.